Claims

1. A method for the detection of a symbol from a received signal wherein the symbol is a selected symbol out of a predetermined set of symbols, wherein each symbol of the predetermined set is a CCK symbol comprising a sequence of chips wherein each of the chips is PSK-modulated according to a selected modulation code wherein each of the selected modulation codes comprises a first sub-modulation code which is a selection from a plurality of first sets of predetermined phase modulating elements and a second sub-modulation code which is a selection from one second set of predetermined phase modulating elements wherein at least one of said predetermined phase modulating elements of said second set is a complex value such as defined in the high speed IEEE 802.11 standard, wherein a modulation code is selected from said modulation codes which correlates according to a correlation method with the received signal,

characterised in that,

the method comprises at least the following steps:

- a. correlating the received signal with each of the possible first sub-modulation codes for obtaining first correlation results and selecting a correlation result;
- b. phase-modulating the selected first correlation result with one of said possible second sub-modulation codes for each possible second sub-modulation code for obtaining second correlation results;
- c. selecting the maximum second correlation result from the second correlation results;
- d. selecting the symbol of the received signal on the basis of a combination the first and second correlating results.

2. A method according to claim 1, characterised in that, in step a. for each first correlation result the value of a function of the correlation result is determined and subsequently the first correlation result which provides the maximum value of the function is selected wherein the function is determined by the type of modulation of the second sub-modulation code.

3. A method according to claim 2, characterised in that the function is a function of the real and/or imaginary parts of the first correlation result.

4. A method according to any preceding claim, characterised in that, the number of first modulation results obtained in step a. equals to $C_1*C_2*...*C_{i-1}*C_i*C_{i+1}*...*C_n$ wherein C_i is the number of elements of the i^{th} first set of the first sets.

5. A method according to any preceding claim, characterised in that, in step b in a first substep the selected first correlation result is phase-modulated with each of said possible second sub-modulation codes and in a second substep real values are determined from results obtained in the first substep for obtaining the second correlation results.

6. A method according to any preceding claim, characterised in that, the number of second modulation results obtained in step c. equals the number of predetermined phase modulating elements of the second set.

7. A method according to any preceding claim, characterised in that, in step c. a predetermined phase modulating element of the second set is selected which provides the selected second correlation result.

8. A method according to any preceding claim, characterised in that, in step d. the predetermined phase modulating elements of the first sets are selected which provides the selected first correlation result.

9. A method according to claims 7 and 8, characterised in that in step d the selected predetermined phase modulating element of the second set and the predetermined phase modulating elements of the first sets are combined to obtain the symbol in the received signal.

10. A method according to any preceding claim, characterised in that, in step a. a first correlator bank comprising a number of correlators is used, wherein this number of correlators equals the number of first correlation results.

11. A method according to any preceding claim, characterised in that, in step b. a second correlator bank comprising a number of correlators is used, wherein this number of correlators equals the number of second correlation results.

12. An apparatus for the detection of a symbol from a received signal wherein the symbol is a selected symbol out of a predetermined set of symbols, wherein each symbol of the predetermined set is a CCK symbol comprising a sequence of chips wherein each of the chips is PSK-modulated according to a selected modulation code wherein each of the selected modulation codes comprises a first sub-modulation code which is a selection from a plurality of

first sets of predetermined phase modulating elements and a second sub-modulation code which is a selection from one second set of predetermined phase modulating elements wherein at least one of said predetermined phase modulating elements of said second set is a complex value such as defined in the high speed IEEE 802.11 standard, the apparatus comprising correlating means for correlating the received signal with said modulation codes according to a correlation method and means for selecting a modulation code from said modulation codes on the basis of the correlation,

characterised in that,

the apparatus comprises:

- a first correlator bank for correlating the received signal with each of the possible first sub-modulation codes for obtaining first correlation results;
- first selection means for selecting a first correlation result from the first correlation results;
- a second correlator bank for phase-modulating the first correlation result with one of said possible second sub-modulation codes for each possible second sub-modulation code for obtaining second correlation results;
- second selection means for selecting the maximum second correlation result from the second correlation results;
- a control-unit comprising means for controlling the first selecting means on the basis of the first correlation results;
- third selecting means for selecting the symbol of the received signal on the basis of the first and second correlation results.

13. An apparatus according to claim 12, characterised in that, the control-unit determines for each first correlation result the value of a function of the correlation result, wherein the function is determined by the type of modulation of the second sub-modulation code, and subsequently controls the first selection means on the basis of the maximum value of the function in such a way that the corresponding first correlation result is selected by the first selection means and passed to the second correlator-bank.

14. An apparatus according to claim 13, characterised in that the function is a function of the real and/or imaginary parts of the first correlation result.

15. An apparatus method according to any one of the claims 12-14, characterised in that, the number of first correlation results obtained by the

first correlator-bank equals $C_1*C_2*...*C_{i-1}*C_i*C_{i+1}*...*C_n$ wherein C_i is the number of elements of the i^{th} first set of the first sets.

16. An apparatus according to any one of the preceding claims 12-15, characterised in that, the second correlator-bank comprises means for phase-modulating the selected first correlation result with each of said possible second sub-modulation codes for obtaining phase modulation results and also comprises means for determining real values of the obtained phase-modulated results for obtaining the second correlation results.

17. An apparatus according to any one of the preceding claims 12-16, characterised in that, the number of second correlation results equals the number of predetermined phase modulating elements of the second set.

18. An apparatus according to any one of the preceding claims 12-17, characterised in that, the third selection means select a predetermined phase modulating element of the second set which provides the selected second correlation result.

19. An apparatus according to any one of the preceding claims 12-18, characterised in that, the third selection means select predetermined phase modulating elements of the first sets which provides the selected first correlation result.

20. An apparatus according to claim 18 or 19, characterised in that the third selection means combine the selected predetermined phase modulating element of the second set and the selected predetermined phase modulating elements of the first sets to obtain the symbol of the received signal.